PROCEEDINGS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY.

VOL. I. MARCH & APRIL, 1840. No. 11.

Stated Meeting, March 6.

Present, thirty-one members.

Mr. DU PONCEAU, President, in the Chair.

Mr. Geo. M. Justice presented an original document containing William Penn's objections to the accounts of his steward, Philip Ford, which exhibited overcharges on Ford's part to the amount of £9697, and stating William Penn's reasons why he submitted himself to their "unnatural confinement of him to the Fleet."

Mr. Lea read a paper on the Patella Amæna of Say, which was referred to a Committee.

Professor Bache read a paper entitled "Observations of the Magnetic Intensity at twenty-one Stations in Europe," which was referred to a Committee.

A communication was read from Dr. Locke, of Cincinnati, containing an account of magnetic observations at several places in the northwest of the United States, which was referred to a Committee.

Dr. Patterson exhibited some specimens of the Heliographic Art (Daguerréotype) of a large size, executed by Mr. Robert Cornelius of Philadelphia; and stated to the Society, that Mr. Cornelius had succeeded in obtaining beautiful representations upon highly polished silver plate.

Mr. Saxton exhibited additional medals obtained by the galvanic process of Professor Jacobi; and likewise pieces of charcoal and anthracite, which he had used as substitutes for the forms of fusible metal ordinarily employed. These were perfectly coated with copper,—a fact which shows it to be but necessary that the substance at the negative electrode should be a conductor of electricity.

Stated Meeting, March 20.

Present, twenty-seven members.

Mr. Du Ponceau, President, in the Chair.

The following donation was received:—

FOR THE CABINET.

A specimen of Native Platinum, from Russia, weighing one ounce and twenty grains.—*From Col. Melnikoff*, of the Russian Service.

The Committee, consisting of Professor Henry, Dr. Patterson, and Mr. Walker, to whom was referred a paper entitled, "Observations of the Magnetic Intensity at twenty-one Stations in Europe. By A. D. Bache, LL.D., President of the Girard College for Orphans, &c.," reported in favour of the publication of the paper in the Society's Transactions. The Report was adopted, and the publication ordered accordingly.

The stations at which the observations, recorded in this memoir, were made, were twenty-one in number: three in Great Britain, and the others on the continent of Europe. They include Edinburgh, Dublin, London, Brussels, Berlin, Paris, Vienna, the Flégière, Brientz, the Faulhorn, Geneva, Chamberi, Chamouni, Lyons, Milan, Venice, Trieste, Florence, Turin, Rome, and Naples. The author remarks, that the magnetic dip and intensity are so well known at some of these places, that he produces his results for them, in order that, by comparison with those of other observers, the value of his determinations for other places may be judged of. The observations were of the horizontal intensity and dip, except in the comparison of the intensities at London and Paris, where, in addition, the statical method devised by Prof. Lloyd was used. At three of the stations the dip was not observed. The horizontal intensities were generally compared by oscillating two different needles in a rarefied medium, according to the method described by the author in a former paper (Am. Philos. Society's Transactions, Vol. V). At London and Paris, two additional needles were employed. The dip was observed in the usual way, with an instrument by Robinson, by whom also the nee-

dles for Prof. Lloyd's method were made. The corrections required for temperature in the horizontal needles had been previously obtained. The correction, for loss of magnetism by the needles, was ascertained from observations at Philadelphia, London, and Paris, and curves traced representing the loss, from which the specific correction, to be applied at any epoch, was readily obtained. The curve for one of the needles, showed a tendency towards a permanent state, and for the other was nearly a straight line. Irregular changes took place in neither needle. The author's experience with these needles, induces him to give a preference to the method of placing the needles in pairs, over that which he has hitherto employed, of keeping each needle separate from the other. A suggestion also results in the use of the dipping needle, of the necessity of ascertaining that the needles have, in the reversal of the poles, been charged nearly, or quite, to saturation. The author takes occasion to correct his statement in regard to the inefficacy of heating needles in boiling water in producing an approach to a permanent magnetic state. The observations at each station, with the corrections employed, are given in tables; and the number observed for the dip, or calculated for the horizontal or total intensities, are compared with the results of other observers.

The memoir concludes with the following abstract of the numerical results.

No.	Places.	Latitude.	Long. from Paris.	Date.	Horizontal Intensity.	Dip.	Total Intensity.
		° ′	° ′		Paris=1	° ′	Paris=1
1	Edinburgh,	55 57 N.	5 32 W	Feb. 3, 1837	0.841	— —*	——
2	Dublin,	53 23 "	8 41 "	Nov. 20, 1836	0.879	— —*	——
3	London,	51 31 "	2 26 "	June 16, 1837	0.939†	69 16.0	1.021
4	Brussels,	50 51 "	2 02 E.	July 25, 1838	0.969	— —*	——
5	Berlin,	52 32 "	11 02 "	Dec. 16, 1837	0.979	68 08.5	1.014
6	Paris,	48 50 "	0 00 "	Aug. 17, 1837	1.000	67 20.8	1.000
7	Vienna,	48 13 "	14 02 "	Mar. 23, 1838	1.090	64 49.7	0.989
8	The Flégière,	— —	— —	Aug. 26, 1837	1.099	64 35.8	0.987
9	Brientz,	— —	— —	Sept. 22, "	1.078	65 06.7	0.987
10	The Faulhorn,	— —	— —	Sept. 20, "	1.082	65 01.7	0.987
11	Geneva,	46 12 "	3 49 "	Aug. 25, "	1.086	64 49 8	0.984
12	Chamberi,	— —	— —	June 21, 1838	1.089	64 35.0	0.979
13	Chamouni,	— —	— —	Aug. 26, 1837	1.088	64 38.2	0.979
14	Lyons,	45 46 "	2 29 "	June 25, 1838	1.078	64 49 0	0.978
15	Milan,	45 28 "	6 51 "	June 10, "	1.111	63 54.7	0.972
16	Venice,	45 26 "	10 10 "	April 11, "	1.129	63 21.9	0.971
17	Trieste,	45 38 "	11 27 "	April 4, "	1.128	63 20.5	0.970
18	Florence,	43 47 "	8 55 "	May 28, "	1.170	62 05.5	0.905
19	Turin,	45 04 "	5 20 "	June 17, "	1.094	63 52.2	0.959
20	Rome,	41 54 "	10 10 "	May 18, "	1.225	60 14.0	0.952
21	Naples,	40 52 "	11 57 "	May 7, "	1.249	59 05.1	0.938

* Dip not observed.

† Mean of results in June, July, and Aug. 1837, and in July and Aug. 1838.

The Committee, consisting of Mr. Nicklin, Prof. Bache, and Dr. Hays, to whom was referred a paper entitled "On the Patella Amæna of Say, by Isaac Lea," reported in favour of publication, which was ordered accordingly.

In this paper, Mr. Lea gives a Synonymy, showing that the *Patella Amœna* of Say was first described by Müller, under the specific name of *Testudinalis:* Zool. Dan. p. 237; and Mr. Couthouy, having lately given an elaborate description of the animal, in the Boston Journal of Natural Science, showing that it belongs to the new genus *Patelloida*, recently established by Quoy and Gaimard; Mr. Lea argues that it should henceforth be called *Patelloida Testudinalis.*

A Communication was read, entitled, "On the Storm which was experienced throughout the United States, about the 20th of December, 1836; by Elias Loomis, Professor of Mathematics and Natural Philosophy in Western Reserve College," which was referred to a Committee.

Dr. Hare read a Communication, entitled, "1. The Well-known Features of the Climate of the Atlantic States. 2. On Certain Facts and Inferences respecting the Origin and the Effects of the Trade Winds, and the Westerly Breezes which they must induce, or into which they must be deflected. 3. Of Certain Facts or Laws of Electrical Reaction, which have been ascertained experimentally, and which render it irrational not to consider Electricity as the Principal Instrument of Nature in the Production of Storms."

The paper was referred to a Committee.

Mr. Peale exhibited specimens of Medals, obtained by the process of Professor Jacobi. He stated, that Mr. Eckfeldt, of the Mint, had found the specific gravity of the copper, thus procured, to be as high as that of rolled copper; that is, 8.95.

Mr. Peale also exhibited a diaphragm of parchment, which had been used in the battery employed in the process, and upon which metallic copper had been precipitated. He farther exhibited specimens of Metallic Silver, reduced, by a similar process, from the chloride of silver; but remarked,

that it was not likely to lead to any useful analogous result, owing to the silver being deposited in a granular state.

Mr. Sears C. Walker read an extract from a letter of Prof. S. Alexander, of Princeton, giving a Description, with Drawings, of two Appearances of Lateral and Vertical Mirage, noticed by him.

The thermometer, in both instances, was nearly at 0° Fahrenheit. The first was of the rising of the sun, seen in the winter of 1834–5, across the valley of Stony Brook, through which the Delaware and Raritan Canal passes. The distorted and ragged shape of the sun resembled a sketch, made by Mr. Head, of the moon's appearance several minutes before setting, Jan. 7th, 1825, at Port Bowen, in Captain Parry's third voyage. The other phenomenon was observed by Prof. Alexander, at sea, off Cape May, Dec. 15th, 1834. The preceding night had been severely cold, and the surface of the ocean was covered with a thin cloud, denominated by the Greenlanders, "port smoke." In the afternoon, as the sun approached the horizon, a brilliant and distinct image of himself arose to meet him. After the apparent contact of the two discs, the two centres approached and passed each other, leaving visible, however, only the lower segment of the image, and the upper segment of the sun's disc, which double segment became more and more narrow, till it vanished; thus presenting the phenomenon of sunset, at about 15′ above the horizon.

A similar appearance is described in Parry's second voyage, at Winter Island, December 20th, 1821, when an inverted image of the moon appeared just after she had risen.

Dr. Bache reported the decease of John Frederick Blumenbach, on the 22d of January, 1840; and of Joseph Parrish, M.D., on the 18th of March, 1840,—members of the Society.

Dr. Dunglison, Reporter, stated that No. 10 of the Bulletin was ready for distribution.

Stated Meeting, April 3.

Present, twenty-one members.

Judge HOPKINSON, Vice-President, in the Chair.

The following donation was received:—

FOR THE CABINET.

A Musical Reed Instrument, consisting of fourteen Bamboo Reeds, invented at Laos, and described in Ruschenberger's Voyage Round the World.—*Presented by Dr. Ruschenberger.*

The Committee, consisting of Dr. Patterson, Dr. Hare, and Prof. Bache, to whom was referred a paper, entitled "On a new Principle in regard to the Power of Fluids in Motion to produce Rupture of the Vessels which contain them, and on the Distinction between Accumulative and Instantaneous Pressures; by Charles Bonnycastle, Professor of Mathematics in the University of Virginia," reported in favour of its publication in the Transactions of the Society, which was ordered accordingly.

Mr. Bonnycastle's investigation was suggested by a paper read by Dr. Hare, and printed in the Transactions of the Society, entitled "On the Collapse of a Reservoir, whilst apparently subject within to great Pressure from a Head of Water." Dr. Hare pointed out the circumstances attendant upon this curious occurrence, and showed how the vessel might have been momentarily relieved from the pressure of the water within, so as to make that of the surrounding air efficient in producing the collapse. The principal object of Mr. Bonnycastle's paper is to investigate the precise nature and degree of the forces brought into action in this and similar cases.

The results at which Mr. Bonnycastle arrived, are stated by him as follows:

1. It is convenient to distinguish between accumulative and instantaneous loads, or between those which are gradually increased until the deflection due to the ultimate load is obtained, and those which commence in full efficacy from the initial position of the support.

2. Within the limits of perfect elasticity, instantaneous pressure produces twice the effect of that which is accumulative, whether the result be to produce deflection or fracture.

3. In regard to supports perfectly elastic in one direction, and perfectly flexible in the other, instantaneous action, at right angles to the axis of elasticity, produces a deflection which is to that of accumulative action as $\sqrt{4}$ to 1, whilst the tendencies to fracture are as 4 to 1. But should any case occur when the law of elasticity follows an extremely high power of the deflection, then the singular result will follow, that the deflections are the same, whether the force be exerted from the initial state or the state of load, but that the tendency to fracture will be immensely greater in the former case than in the latter.

4. In producing the fracture of natural substances, which all depart from the law of perfect elasticity as we approach the limit of fracture, the ratio of the effect of instantaneous and accumulative action will vary with the nature of the substance, never being less, for elastic bodies, than 2 to 1, nor for flexible than 4 to 1, and more usually approaching 3 or 4 to 1 for the former case, and 5 or 6 to 1 for the latter.

5. Let a vase or conduit be acted on by a load which is alone sufficient to break it, and let this load be partly balanced by a small exterior force: should the great interior force suddenly cease, the small exterior action may crush the vase or conduit inward; its energy in such case being the sum of the interior and exterior forces.

6. Should the interior force be a vibration of the kind already explained, and should the exterior action be extremely feeble, and act on a very great mass, this extremely feeble action may crush the vase inward, with a power that shall exceed in any degree the enormous action of the interior or explosive vibration. The comparison of the interior and exterior actions is best effected in this case, by finding the modulus of elasticity of a material spring that shall coincide most nearly in effect with the interior tremor. For putting e and e' respectively for the modulus of the spring and of the support, and σ and σ' for the deflections resulting from the tremor acting alone, and the reaction as it does act, we have $\frac{\sigma'}{\sigma}=\sqrt{\frac{e}{e'}}$, or, in other words, the deflection produced by the reaction, is to the deflection that would be produced by the interior tremor alone, in the inverse proportion of the square roots of the moduli of tremor and support.

7. Combining what is here said with the known laws of fluids moving in pipes, and whereby they necessarily produce hydraulic shocks, it follows, that any vessel connected with such a train of pipes, and plunged at some little depth in a considerable mass of water, or other heavy fluid, will occasionally be subject to a crushing and exterior force vastly greater than the interior strain due to the constant head of fluid.

In illustration of the principles thus developed, Mr. Bonnycastle details some experiments, and mentions a phenomenon which occurred under his own notice, and is analogous to the one described by Dr. Hare. In making experiments on the propagation of sound through water, he had occasion to cause an explosion of gunpowder within a hollow metallic cylinder, open at the lower end, and immersed under the liquid; and although the strength of the cylinder was abundantly sufficient to bear the statical pressure of the surrounding water, he found it crushed inward after the explosion.

Judge Hopkinson deposited with the Society, the Log Book of the first voyage in a steam vessel across the Atlantic, by Captain Rogers, in the year 1819; an account of which was given in the Proceedings of the Society, No. 2, p. 14.

In a written communication, Judge Hopkinson stated, amongst other matters in reference to Captain Rogers's priority, that he was on board the steamship, lying at the City of Washington, after her return from the voyage. She was built and rigged like one of the Liverpool packets; and her wheels were made to fold up at her sides, when the wind permitted her sails to be used.

The Log Book states, among the occurrences usually noted, the days when the steam was used.

Dr. Hare made some observations on Professor Loomis's views of storms, read at the last meeting; also, on the mode in which storms may be induced by the meeting of opposite currents, and the ascent of an intervening mass of air; on the agency of electricity in their production, &c. &c.

Dr. Hare asked permission to withdraw his paper, presented at the last meeting of the Society, which was agreed to.

He stated that he was about to perform some experiments, the re-

sults of which it appeared to him desirable to publish with his essays, and he was fearful that the subject could not be described satisfactorily without quotations from previous publications, which might not be consistent with the limits allowed to articles published in the Transactions.

Stated Meeting, April 17.

Present, twenty-nine members.

Mr. Du Ponceau, President, in the Chair.

The Committee, consisting of Professor Bache, Dr. Patterson, and Mr. Walker, to whom was referred a paper entitled "On the Storm which was experienced throughout the United States, about the 20th of December, 1836, by Elias Loomis, Professor of Mathematics and Natural Philosophy in Western Reserve College," reported in favour of publication in the Society's Transactions, which was ordered accordingly.

The memoir of Prof. Loomis first describes the sources of information to which he has had access, consisting of various published or private meteorological journals. The principal phenomena occurred in the Eastern States, within the period recommended by Sir John Herschell for hourly meteorological observations; and were, of course, accurately noted at the stations where these observations were made. From various sources, Prof. Loomis has obtained observations of the barometer at twenty-seven different stations in the United States and the neighbouring British possessions, and records of the thermometer and weather from twenty-eight military stations of the United States, from forty-two academies of the State of New York, and from five other stations within the probable limits of the storm, besides others beyond it. In some cases two sets of observations were made at the same station.

The phenomena are discussed by the author under the following heads. 1. A remarkable oscillation of the barometer. 2. A sudden depression of the thermometer. 3. The amount, and the time of be-

ginning and ending of the rain. 4. The direction and velocity of the wind.

1. The observations of the barometer show that during the storm there was a sudden depression of the barometer immediately succeeded by a sudden rise; that the minimum of pressure occurred first in the Western States, and passed in a wave over the United States, moving eastwardly. The curves drawn to represent the heights of the barometer illustrate this fact in a very striking manner. Prof. Loomis has attempted to determine, from the observations, the amount of depression of the barometer, the form and velocity of the atmospheric wave, the progress of which, over the United States, he has represented upon a chart.

2. A comparison of the observations of the thermometer and barometer shows, that while the pressure was diminishing the temperature was increasing, and vice versa. The very remarkable diminution of temperature of 48° Fahr. in six hours and a half, occurred at one station in the northwest of the United States. The commencement of the diminution of temperature is shown to coincide with the minimum of the barometer, and hence is used when barometric observations were not made, to point out the probable time of the occurrence of this minimum. The average of the maxima of the thermometer at the eastern stations was about 3½° Fahr. greater than at the western, and the average of the minima 14° Fahr. greater.

3. Rain or snow fell during the storm within the limits of about latitude 28° N. to latitude 48° N., and from longitude 52° to 96° W. The average amount at fifty-nine stations was seven-eighths of an inch. The author is led to remark upon the great discrepancies in the statements of the fall of rain at places very near each other, and upon defects in the registers in not stating the time of beginning and ending of the rain.

4. The epoch of the minimum of pressure at the several places of observation was marked by a change of wind from a southern quarter, generally the southeast, to a northern quarter, almost uniformly the northwest. This sudden change of wind was everywhere one of the most prominent features of the storm, the wind having been violent both before and after the change; but more violent from the northwesterly direction, except perhaps at New York and in the Northeastern States.

The author sums up thus the characteristic of the storm. After a

cold and clear interval, with the barometer high, the wind commenced blowing from a southerly quarter; the barometer fell rapidly, the thermometer rose, and rain fell in abundance. The wind subsequently veered suddenly to the northwest, and blew with great violence; the rain was succeeded by hail or snow, which continued but for a short time. The changes thus described occurred, not simultaneously, over the United States, but progressively from west to east.

The author next endeavours to determine the limits of the storm, using for this purpose other meteorological registers in addition to those before noticed, and of which he gives a particular account. From these, and theoretical considerations, he places the Rocky Mountains as the western limit, the parallel of 25° N. latitude as the southern limit, the middle of the Atlantic as the eastern limit, and the northern as altogether conjectural, but probably as remote as the Arctic Circle, thus extending over 70° of longitude and 40° of latitude. The question whether the remarkable storm which occurred in Europe about the 25th of December, was a continuation of this storm, is examined, and the author concludes, from a discussion of its peculiarities, that it was not,—the progress of the barometric minimum in Europe being from north to south, inclining a little to the west.

The author next proceeds to generalize the deductions in regard to the circumstances of this storm, and to apply them as tests to the different theories of wind, rain, &c.

He first endeavours to show how far registered observations of the wind may be influenced by localities, and their accuracy affected by the mode of observing, and the transcribing of the registers; and concludes that it is indispensable to regard the average of directions at near stations, and not those at individual ones, and gives some examples of discrepancies at places near each other, in support of this opinion. The anomalies presented by the stations in the State of New York are very curious.

The causes assigned by theory for the production of winds are next enumerated and discussed. Recurring to the observations, the author traces a connection between the direction of the surface wind on the 18th and 19th of December, and a maximum of the barometer existing on a line nearly north and south, moving eastwardly, and passing, on the morning of the 20th of December, nearly through

the eastern extremity of the State of Maine. At this period a minimum of the barometer existed nearly on the line of the river Mississippi, and the winds blew towards this line. This minimum is traced in its motion eastward; and in connection with it, the change of wind from the easterly to the westerly quarter. On the afternoon of the 21st, the line of minimum pressure had reached Boston; and on the 22d, the northwesterly wind now prevailed at nearly all the stations. The direction and approximate force of the wind, on the morning of the 21st, are represented upon a map of the United States, accompanying the memoir. From an examination of a phenomenon of the wind, Prof Loomis concludes that the southeasterly current rose, so that the northwesterly wind thus became the lowermost current; and subsequently, from an examination of the phenomenon of the rain, snow, and hail, that the rising current was, in part at least, deflected back upon itself. The immediate cause of the southeasterly wind is traced to the existence of a minimum of pressure, at some point north of the United States.

The author next examines the various causes which have been, or may be, in his opinion, assigned as producing rain, and infers that the most common cause of rain in these latitudes, is the sudden lifting up of warm air into regions about the earth's surface, by its displacement by a cold current originally above it, and from an opposite direction; and that such was the actual cause of the rain in question, a warm current from the south having been displaced, and caused to rise to a considerable elevation by a cold current from the west. The mixture of the warm and cold air is inadequate, in the author's opinion, to account for the phenomena.

The author then explains the causes of the observed rise of the thermometer to be due to the warm southeast wind, and the subsequent depression to the cold northwest wind.

The author next examines the causes which have been assigned for the fluctuations of the barometer during this storm, selecting, as applicable to the present case, the following: "The southeast wind, which accompanied the rain, moved with an accelerated velocity. The particles, therefore, of air, at one extremity of the current, must have left those of the other extremity at an increased distance. Hence a mechanical rarefaction, and, of course, diminished pressure. The reverse effect must have taken place after the storm had passed. A northwest wind sets in with great violence. A vast body of air is

precipitated toward the southeast The partial vacuum which at first existed, is very soon supplied; yet, though the first impelling cause has ceased to act, the momentum of the excited current still urges it onward, and a condensation results, which continues the rise of the barometer."

The author concludes by remarking, that he has availed himself in these discussions of the suggestions of writers on meteorology, and is especially indebted to the labours of Messrs. Redfield, Espy, and Reid.

Dr. Hare read a communication entitled "Engraving and description of an apparatus and process for the rapid congelation of water, by the explosive evolution of ethereal vapour, consequent to the combined influence of rarefaction and the absorbing power of sulphuric acid, by Robert Hare, M.D.," which was referred to a Committee.

Mr. Walker read a communication, entitled, "Observations on Nebulæ with a fourteen feet Reflector, by H. L. Smith and E. P. Mason, during the year 1839, by E. P. Mason," which was referred to a Committee.

Dr. Hare made a verbal communication in reference to the extent at which the galvanic influence could be extended through a coil of wire.

Dr. Hare stated, that he had prepared a coil of copper wire, No. 26, nearly a mile in length, by means of which, and a strap of copper, three inches in width, and 196 feet in length, he had been enabled to repeat the experiment of Professor Henry, for exciting a Faradian current. The wire was covered with cotton, and was coiled upon a wooden sieve hoop. Being suspended over a pulley, and counterbalanced by a weight over the strap, when this was placed in the circuit of a calorimotor, so that the circuit might be broken by drawing one of the electrodes over a rasp or ratchet wheel, communicating with the coil, shocks were felt, when the distance of several feet intervened, and they became intolerable when the coil and strap were nearly in contact. Having this coil at command, it occurred to Dr. Hare, to ascertain how far it would be competent to act as a multiplier. It seemed to be a problem which was yet to be solved, how far the extension of the length of the coils employed would affect their efficacy. He had not heard of any one in which resort had

been had to an extension so great as a mile. Actuated by these considerations, Dr. Hare supported his coil in a vertical plane, and placed upon the lower and under surface of the hoop, the magnetic needle of an ordinary multiplier. A five cent piece, and a disk of zinc of the same size, being separated by a piece of moistened paper, when one of the ends of the coil was made to touch the silver disk and the other the zinc, the needle moved nearly a quadrant at every contact. When the disk was divided into four parts, every one of them was adequate to produce a movement in the needle, when the coil was made the medium of discharge. That such minute portions of metal should be capable of creating an electrical current in so long a coil, and sufficiently copious to influence a magnetic needle, would have appeared incredible to him, had it not been thus proved experimentally.

Dr. Hare stated the general results of some experiments, made since the last meeting of the Society, on the rarefaction of moist and dry air.

Prof. Bache presented a chart of the magnetic observations made on the 28th of February last, in which he was assisted by Mr. Walker and Mr. Kendall. He farther called the attention of the Society to the recent publication of Prof. Gauss, in regard to the simultaneous changes of magnetic intensity at places as far apart as Göttingen and Münich.

Dr. Dunglison read a letter from the Rev. James T. Dickinson, of Singapore, to Mr. Du Ponceau, dated November 25, 1839, expressing his satisfaction with the views of Mr. Du Ponceau, as contained in his "Dissertation on the Chinese System of Writing."

When Mr. Dickinson commenced the study of the Chinese language, nearly four years ago, he attempted to learn the written language by the eye merely, without connecting sounds with the characters. To this course he was led by the fact, that the Hok-kien dialect, the one he studies, differs very much, as *spoken*, from the sounds given to the characters as *read*. His plan was to learn the colloquial language by itself, and to defer the learning of the sounds given to the characters in reading, while, in the meantime, he endeavoured to learn to read the characters independently of all sounds. In this

way he would have succeeded in learning to read Chinese books, had the common hypothesis, that the Chinese characters are addressed *directly* to the mind, and not to the mind through the medium of sounds, been correct. Mr. Dickinson, however, found himself always translating either into English or the colloquial Chinese. All his efforts to transfer the ideas represented in Chinese books to his own mind, without the help of words, either Chinese or English, were fruitless.

Mr. Dickinson considers the work of Mr. Du Ponceau "a most valuable gift to the world, and an honour to American learning."

Dr. Dunglison referred to a curious but not unique case, of a worm in the eye of a horse now in Baltimore.

The particulars were contained in a letter to him, from Dr. Joshua J. Cohen, of Baltimore. This entozoon is a species of filaria (see *Filaria Papillosa*, Rudolphi, Synops., p. 213), probably from 3½ to 4 inches in length, and situate in the aqueous humour, in which it moves about with great activity, but its motions are so constant, that it is difficult to appreciate its exact length. The great size of the anterior chamber of the horse's eye, affords it ample space; and through the transparent cornea, it can be observed as well as if it were in a glass vessel. The horse was sent up from Calvert County, Maryland.

Dr. Dunglison made some observations on the difficulty of accounting for its presence in this shut sack, and alluded to the different views of distinguished naturalists as to the generation of many of the lower tribes of the animal kingdom,—some presuming that they may be formed spontaneously, whilst others consider that the germs must always be received from without. The difficulty, he observed, applied to all the entozoa that infest the animal body; and this case was certainly not more difficult of explanation, than that of entozoa found in the intestines of the fœtus in utero.

Dr. Bache referred to a similar case, which was published in an early volume of the Transactions of the Society (Vol. II. p. 183, by F. Hopkinson, Esq., and Ibid. p. 383, by Dr. Morgan).

Mr. Walker referred to a letter which he had received from Prof. Loomis, containing two observations of Galle's second

comet, and stated, that he (Mr. Walker) had been engaged in deducing the elements of the orbit of the comet, which accorded with results of European observers, but did not perfectly correspond with those of Prof. Loomis.

The following gentlemen were duly elected members of the Society:

Paul Beck Goddard, M.D., of Philadelphia.

W. H. C. Bartlett, Professor of Natural and Experimental Philosophy, West Point.

Wm. R. Fisher, M.D., of Philadelphia.

George M. Wharton, of Philadelphia.

Friedr. Wilhelm Bessel, Director of the Observatory, Königsberg.

Rev. Wm. H. Furness, of Philadelphia.

Captain Francis Beaufort, R. N., Hydrographer to the Admiralty of Great Britain.

Hartman Kühn, of Philadelphia.

George Washington Smith, of Philadelphia.